Exhibit R-2, RDT&E Budget Item Justification: PB 2012 Missile Defense Agency	DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
Total Program Element	148.506	112.678	96.353	-	96.353	53.577	47.592	32.289	34.308	Continuing	Continuing
WX12: *Space Tracking and Surveillance System (STSS) Capability Development*	148.506	-	-	-	-	-	-	-	-	0.000	148.506
MD12: *Space Tracking and Surveillance System (STSS)*	-	108.842	92.078	-	92.078	51.049	45.167	30.630	32.551	Continuing	Continuing
MD40: *Program-Wide Support*	-	3.836	4.275	-	4.275	2.528	2.425	1.659	1.757	Continuing	Continuing

Note

In accordance with the Missile Defense Agency revised budget structure, funding for Program Element 0603893C, Project WX12 moves to Project MD12 in FY 2011.

The Near Field Infrared Experiment (NFIRE) program funding is captured in this Program Element, Project WX12 for FY 2010. As indicated in the President`s Budget FY 2011 submission of this Program Element`s Budget Exhibit`s FY 2010 Plans in Project WX12, MDA assessed the health and utility of the NFIRE satellite for potential, future utilization and deemed the health/utility sufficient to warrant continued funding of the activity. The funding for NFIRE beginning FY 2011 will be captured under this Program Element in Project MD12. MDA will continue to assess the health/utility of the NFIRE satellite on an annual basis for a determination to continue NFIRE operations and testing.

A. Mission Description and Budget Item Justification

The Space Tracking and Surveillance System (STSS) launched two demonstration satellites on 25 September 2009 and has begun integration with BMDS testing through participation in tests as a mandatory asset on an as capable basis even as system functionality testing has been progressing. Upon completion of the system functionality tests, the satellites will dedicate efforts to performance testing. Funds are provided for STSS on-orbit operations which includes contractor operation of the STSS Demonstration Satellites and software upgrades; Government costs; BMDS Level Testing and Element Integration and Testing; Data Collection and Analysis activities; and Near Field Infrared Experiment (NFIRE) tests and experiments.

Space Tracking and Surveillance System (STSS)

The STSS program will emphasize continued research and development to address the more sophisticated threats we expect to encounter in the far term. The greatest hedge against missile defense threats of all ranges remains a highly available early missile tracking capability from space. Space sensors provide the most cost effective and operationally suitable means of providing global persistent surveillance and engagement, directly addressing the number one missile defense priority need for Combatant Commanders. The Space Tracking and Surveillance System (STSS) is a capability development activity for the demonstration of technologies to support

development and future capability delivery of the BMDS space layer. The STSS Demonstration Satellites will demonstrate the ability of a space sensor to provide high precision, real time tracking of missiles and midcourse objects, thus enabling simultaneous regional, theater, and strategic missile defense. Data from on-going STSS testing will validate the ability to track cold, midcourse objects from space and close the fire control loop with BMDS interceptors. Additionally, STSS provides a new infrared sensor phenomenology for the BMDS, when combined with radars, provides robustness against current and advanced countermeasures.

MDA has developed and is testing the STSS Demonstration Satellites to demonstrate key functions of space sensors. Lessons learned from the Demonstration Satellites efforts will provide key data as MDA pursues longer term space sensor needs.

- Space sensors extend BMDS sensor coverage to a global level. STSS will demonstrate the capability of satellites to track ballistic missiles and the ability to provide accurate tracking information to the BMDS battle manager to close the fire control loop with BMDS interceptors, thus extending the effective range of BMDS interceptors and other sensors.
- Space-based sensors are not limited by basing rights issues or deployment decisions, and will allow cost effective coverage of countries and large areas not accessible from ground based sensors. Approximately fifty Army Navy/Transportable Radar Surveillance - Model 2 (TPY-2) radars or approximately twenty sea-based X-Band radars are required to provide the equivalent mid-latitude coverage of a spaced-based constellation.
- Space based visible and Infrared (IR) sensors will complement radars and contribute to a sensor architecture more robust to countermeasures
- Space-based sensors will enable near continuous threat observation and tracking from launch to intercept, covering threats by augmenting the coverage of the BMDS radars, and providing state vectors to Command and Control, Battle Management and Communications (C2BMC) to enable interceptor fire control via multiple BMDS assets (Aegis, Ground-based Midcourse Defense (GMD), Terminal High Altitude Area Defense (THAAD))

MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. Space Tracking and Surveillance System (STSS) Element Level testing is funded as part of a capabilities development program and reflected in this Program Element (PE) submission.

Near Field Infrared Experiment (NFIRE)

The Near Field Infrared Experiment (NFIRE) technology project was designed to collect near field phenomenology data for use in plume to hard body handover algorithms for boost phase interceptor programs. MDA is using this data to validate the models and simulations that are fundamental to developing the guidance and endgame homing algorithms for boost phase interceptors. A secondary objective of the experiment has been to collect hyper-temporal short wave infrared and visible data for assessing early launch detection and tracking capability. The experiment includes three plume signature mission types: targets of opportunity, dedicated fly-bys, and ground observations. The dedicated fly-by experiments have been accomplished. The Near Field Infrared Experiment (NFIRE) satellite also carries a Laser Communication Terminal, which has been and continues to be used to conduct communication experiments with the German Terra SAR-X satellite. These experiments

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test low earth orbit satellite-to-ground and satellite-to-satellite capabilities of the terminal for potential incorporation into the Ballistic Missile Defense System. The NFIRE satellite is operated from the Missile Defense Space Experimentation Center (MDSEC) by the Ballistic Missile Defense Space System. Data products are utilized by multiple programs to improve missile engagement performance.

Goals for Near Field Infrared Experiment:

- Conduct multiple data collection missions from the MDSEC against ground, air, space and ballistic missile targets of opportunity
- Conduct low earth orbit satellite-to-satellite and satellite-to-ground laser communication experiments
- Provide data to validate models and simulations that are fundamental to developing the navigation, guidance and control, and endgame homing algorithms, as well as laser communication proof of concept

B. Program Change Summary ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total
Previous President's Budget	161.609	112.678	98.500	-	98.500
Current President's Budget	148.506	112.678	96.353	-	96.353
Total Adjustments	-13.103	-	-2.147	-	-2.147
• Congressional General Reductions		-			
• Congressional Directed Reductions		-			
• Congressional Rescissions	-	-			
• Congressional Adds		-			
• Congressional Directed Transfers		-			
• Reprogrammings	-4.000	-			
• SBIR/STTR Transfer	-3.346	-			
• Other Adjustment Detail	-5.757	-	-2.147	-	-2.147

Change Summary Explanation

This program has realized $4.414 million in efficiency savings.

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COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
WX12: *Space Tracking and Surveillance System (STSS) Capability Development*	148.506	-	-	-	-	-	-	-	-	0.000	148.506
Quantity of RDT&E Articles	0	0	0		0	0	0	0	0		

A. Mission Description and Budget Item Justification

Project WX12 has been transferred to Project MD12.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: See Project MD12 for FY 2010 Accomplishments	148.506	-	-
Articles:	0		
Description: See Description Below			
FY 2010 Accomplishments: See Project MD12 for FY 2010 Accomplishments.			
Accomplishments/Planned Programs Subtotals	148.506	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

NA

E. Performance Metrics

NA

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COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
MD12: *Space Tracking and Surveillance System (STSS)*	-	108.842	92.078	-	92.078	51.049	45.167	30.630	32.551	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0		0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, funding for Program Element 0603893C, Project MD12 was moved from Project WX12 in FY 2011.

A. Mission Description and Budget Item Justification

The Space Tracking and Surveillance System (STSS) Demonstration Satellites will demonstrate key functions of missile tracking with space sensors. STSS will enable early capability assessment of the Warfighters` need for a highly available early missile tracking capability from space providing an operationally suitable means of global persistent surveillance and engagement. Capabilities that will be assessed by STSS include detecting and acquiring ballistic missiles; tracking ballistic missiles and their deployed objects; performing autonomous acquisition-to-track handover within a satellite; performing tracking handover to a satellite from a ground cue; performing uplink and downlink of mission, health, and status data both directly and via crosslink between two satellites; reporting ballistic missile and intercept event to close the fire-control loop; filtering reports to Command and Control, Battle Management and Communications (C2BM) to include only those that involve sub-orbital objects or orbital objects on an approved inclusion list; providing near real-time object data to external users; and providing a System Performance Evaluation Tool model. As such, the demonstration of these activities will support future capability development and will enable meeting a Warfighter`s need from the Prioritized Capability List to include track missile threats and contacts of interest; provide post-launch sensor cueing; integrate, fuse and correlate sensor data; engage/re-engage ballistic missile threats; and provide system modeling tools.

The Space Tracking and Surveillance System (STSS) Demonstration Satellites provide two on-orbit satellite assets with visible and infrared sensors in low earth orbit for testing with other BMDS elements. These two satellites provide valuable risk reduction for acquisition, tracking, and discrimination functionality to include stereo data fusion, cueing radars over the horizon and over-the-horizon fire control. The program is demonstrating the functions and interfaces required for space data delivery to the BMDS, validating the data quality necessary for interceptors to launch and/or engage on STSS sensor data. The two Demonstration satellites are operated 24 hours a day, 7 days a week, 365 days a year from the ground station processing center at the Missile Defense Space Experimentation Center (MDSEC) with a government and contractor team. On-orbit, STSS Demonstration Satellites will continue to collect data within the satellites` field of view. Data collection and analyses continues in FY 2011 and FY 2012 with the Space Tracking and Surveillance System (STSS) to view all available Targets of Opportunity (TOOs) to include participation with other BMDS target and flight tests that provide demonstration of the MDA Space Layer capabilities and allow collection of future system risk reduction information.

MDA Element testing is based on an integrated, comprehensive, and phased test program. Element systems, subsystems, and components are tested early in development and are necessary prior to conducting BMD-System level testing. The Space Tracking and Surveillance System (STSS) Element Level testing is funded as part of a capabilities development program and reflected in this Program Element (PE) submission. The Space Tracking and Surveillance System (STSS) Demonstration Satellites demonstrate key functions of space sensors. MDA will continue planning for and conduct integrated BMDS intercept tests based on track

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data passed from the STSS Demonstration Satellites through Command and Control, Battle Management and Communications (C2BMC) to Aegis, GMD, or other interceptors.

The Space Tracking and Surveillance System (STSS) Demo Analysis Center (SDAC) enables independent government analysis of STSS Demonstration Satellites data. The Center infrastructure includes network communications, encryption/decryption devices, and software tools for mission planning and simulation, and data management tools. This infrastructure enables test engineering and analysis support for Space Tracking and Surveillance System (STSS) Demonstration Satellites data validation and verification, BMDS testing, and collection of scientific data for refinement of BMDS-relevant models.

The Near Field Infrared Experiment (NFIRE) satellite is operated from the Missile Defense Space Experimentation Center (MDSEC) and will continue collection of hyper-temporal short wave infrared and visible data from Targets of Opportunity (TOOs) for assessing early launch detection and tracking capability. The Near Field Infrared Experiment (NFIRE) satellite also carries a Laser Communication Terminal to conduct communication experiments with the German Terra SAR-X satellite. These communications experiments test low earth orbit satellite-to-ground and satellite-to-satellite laser communications capabilities for potential incorporation into the Ballistic Missile Defense System. The laser communication experiments will be conducted on a non-interference basis with other MDA missions.

Lessons learned and data gathered from the Space Tracking and Surveillance System (STSS) Demonstration program and the Near Field Infrared Experiment (NFIRE) program will provide valuable information for modeling and simulation activities in assessing the capability of a low earth orbit constellation to complement sensor coverage and missile detection and tracking capabilities provided by Advanced Overhead Persistent Infrared (OPIR) sensors.

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: Demonstration Satellites	-	84.637	69.613
Articles:	0	0	0
Description: See Description Below			
FY 2010 Accomplishments: Funding for FY 2010 accomplishments is reported in prior year budget project WX12 ($111.878 million): -Following launch of the two Space Tracking and Surveillance System (STSS) Demonstration Satellites in September 2009, the program has conducted a year long on-orbit checkout, calibration, and functional testing of the satellites and missile tracking payloads. This included tracking of multiple ballistic missiles, satellites, and ground targets. Details of this testing are provided in the test specific sections, BMDS Level Testing and Element Integration and Testing, that follow. -Conducted obsolescence review of Ground Station hardware/software to determine refresh requirements -Began execution of the STSS six Critical Engagement Conditions (CECs) and three Empirical Measurement Events (EMEs)** -Collection of test data from CECs/EMEs used in updating and verification, validation, and accreditation of modeling and simulation representations for assessing system performance			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
** Critical Engagement Conditions (CECs)/Empirical Measurement Events (EMEs) are the conditions where data is obtained from flight and ground tests in order to anchor models and simulations ***FY 2011 Plans:*** -Completed on-orbit calibration and system performance testing. -Conduct missile tracking experiments as identified in the test specific sections, BMDS Level Testing and Element Integration and Testing, that follow. -FY 2011 testing of the Space Tracking and Surveillance System (STSS) Demonstration Satellites continues the execution of the STSS-related Critical Engagement Conditions (CECs)/Empirical Measurement Events (EMEs) with sufficient data collected to complete four of the six CECs and one of the three EMEs -Collection of test data from Critical Engagement Conditions (CECs)/Empirical Measurement Events (EMEs) used in updating and verification, validation, and accreditation of modeling and simulation representations for assessing system performance -During FY 2011, MDA plans to focus the Space Tracking and Surveillance System (STSS) program on operations, sustainment, and testing. The majority of the functions performed by the program management office at the Space and Missiles System Center (SMC) will be transitioned to the Missile Defense Space Experimentation Center (MDSEC) in Colorado Springs, CO -Conduct independent government validation of STSS Demonstration Satellites data in the STSS Demo Analysis Center ***FY 2012 Plans:*** -Conduct missile tracking experiments as identified in the test specific sections, BMDS Level Testing and Element Integration and Testing, that follow -FY 2012 testing of the Space Tracking and Surveillance System (STSS) Demonstration Satellites continues the execution of the STSS-related Critical Engagement Conditions (CECs)/Empirical Measurement Events (EMEs) with sufficient data collected to complete five of the six CECs and one of the three EMEs -Collection of test data from Critical Engagement Conditions (CECs)/Empirical Measurement Events (EMEs) used in updating and verification, validation, and accreditation of modeling and simulation representations for assessing system performance -Conduct independent government validation of Space Tracking and Surveillance System (STSS) Demonstration Satellites data in the STSS Demo Analysis Center			
Title: BMDS Level Testing ***Articles:*** ***Description:*** See Description Below	- 0	13.219 0	15.316 0

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
FY 2010 Accomplishments: Funding for FY 2010 accomplishments is reported in prior year budget project WX12 ($8.751 million): -Performed planning and execution of Space Tracking and Surveillance System (STSS) participation in BMDS flight tests which demonstrated completion of initial calibration of the satellite bus and acquisition payload and collected data for sufficiency analysis of two Critical Engagement Conditions -- Booster Acquisition and Plumes -Tracked five BMDS targets -Ground-based Midcourse Defense 2-stage Booster Characterization Flight Test (BVT-01) -Collected data demonstrating mono acquisition sensor tracking -United States Air Force Glory Trip 200 Flight Test (GT-200) -Collected data demonstrating mono acquisition sensor tracking -Terminal High Altitude Area Defense (THAAD) Intercept Flight Test (FTT-14): THAAD low-endo intercept of a unitary Short-Range Ballistic Missile (SRBM) target -Collected data demonstrating stereo acquisition sensor tracking and sufficiency for acquisition-to-track handover -United States Air Force Glory Trip 202 Flight Test (GT-202) -Collected data demonstrating stereo acquisition sensor tracking and mono track sensor tracking -Airborne Laser Test Bed (ALTB) Flight Experiment (FEL-01b): ALTB intercept of a SRBM -Collected data demonstrating successful autonomous acquisition-to-track handover on a ballistic target -Initiated planning for integrated BMDS intercept test based on track data passed from the Space Tracking and Surveillance System (STSS) Demonstration Satellites through Command and Control, Battle Management and Communications (C2BMC) to Aegis or other weapon systems -Planned and participated in available Targets of Opportunity (TOOs) -Planned and coordinated range activities to support the MDA Integrated Master Test Plan (IMTP)			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
-Completed setup of the Space Tracking and Surveillance System (STSS) Demo Analysis Center for engagement in independent government validation and verification activities of STSS Demonstration Satellites data, participation in BMDS testing, and collection of scientific data for refinement of BMDS-relevant models. ***FY 2011 Plans:*** Plan and execute Space Tracking and Surveillance System (STSS) participation in BMDS flight tests. Collection from a variety of test targets and conditions enable a statistically relevant database to be constructed to support future space system design. -Tracked one BMDS target -Aegis Simulated Intercept Flight Test (JTFM-04 E1): Aegis 4.0.1 simulated intercept of a surrogate separating Medium-Range Ballistic Missile (MRBM) -Collected data demonstrating stereo track sensor tracking -Collected data demonstrating autonomous fully calibrated stereo acquisition sensor Object Sighting Messages -Used data to analyze simulation of Aegis Launch-On STSS track -Fused STSS Object Sighting Message data in the Enterprise Sensors Laboratory and passed data to X-Lab using post-test playback of recorded data -Current STSS participation in the Integrated Master Test Plan (IMTP) is planned to include the following BMDS flight tests with STSS striving to meet reasonable expectations to view these as well as seeking opportunities to participate in other IMTP events: -Arrow Intercept Flight Test (USFT-4): Multi-national BMD test with Arrow intercept of Short-Range Ballistic Missile (SRBM) with European Command participation -Collect data to analyze Space Tracking and Surveillance System (STSS) cold-body target tracking capability -Aegis Simulated Intercept Flight Test (FTM-16 E1): Aegis 4.0.1 simulated Standard Missile-3 (SM-3) Block IB intercept of a Short-Range Ballistic Missile (SRBM) target with Associated Objects -Collect data to analyze real-time sharing of track messages to the BMDS -Simulate Aegis (Hardware-in-the-Loop) Engage-On Space Tracking and Surveillance System (STSS) track -Conduct post-test assessment to support STSS providing precision cue to the Terminal High Altitude Area Defense in post-test playback of recorded data -United States Air Force Glory Trip 203 Flight Test (GT-203)			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
-Collect data to analyze STSS cold-body target tracking capability -Fuse STSS Object Sighting Message and other sensors data in the Enterprise Sensors Laboratory and pass to the X-Lab to provide a single system track -Short-Range Air Launched Target Flight Test (FTX-17): Return to flight of the Short-Range Air Launch Target -Collect data and analyze Space Tracking and Surveillance System (STSS) capability in the areas of Booster Acquisition, Plumes, Hard Body Detection, Complex Scenes, Post Boost Detection, and Multiple Objects in a Scene -STSS Object Sighting Messages will be fused in the Enterprise Sensors Laboratory and passed to the X-Lab to produce BMDS system tracks -Aegis Flight Test (FTM-15): Aegis 3.6.1 SM-3 Block IA -Collect data to analyze Space Tracking and Surveillance System (STSS) emerging threat detection and threat capability -Fuse STSS Object Sighting Message and other sensors data in the Enterprise Sensors Laboratory and pass to the X-Lab to provide a precision cue using post-test playback of recorded data as risk reduction for future Launch on Remote -Aegis Intercept Flight Test (FTM-16 E2): Aegis 4.0.1 intercept using a Standard Missile-3 (SM-3) Block 1B interceptor against a Short-Range Ballistic Missile (SRBM) target -Collect data to analyze real-time sharing of track messages to the BMDS -Simulate Aegis (Hardware-in-the-Loop) Engage-On Space Tracking and Surveillance System (STSS) track -Conduct post-test assessment to support STSS providing precision cue to the Terminal High Altitude Area Defense through post-test playback of recorded data -Terminal High Altitude Area Defense (THAAD) intercept Flight Test (FTT-12): THAAD exo-intercept of a complex separating Medium-Range Ballistic Missile (MRBM) target with Associated Objects -Demonstrate STSS precision cue to Terminal High Altitude Area Defense (THAAD) for live intercept -Collect data and analyze STSS capability in the areas of Booster Acquisition, Plumes, Hard Body Detection, Complex Scenes, Post Boost Detection, and Multiple Objects in a Scene -Demonstrate STSS precision cue to other sensors in post-test playback of recorded data -Continue planning for integrated BMDS intercept tests based on track data passed from the Space Tracking and Surveillance System (STSS) Demonstration Satellites through Command and Control, Battle Management and Communications (C2BMC) to Aegis or other weapon systems			

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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
-Plan and participate in available Targets of Opportunity (TOOs) -Plan and coordinate range activities to support the MDA Integrated Master Test Plan (IMTP) -Continue Space Tracking and Surveillance System (STSS) Demo Analysis Center participation in BMDS testing and collection of scientific data for refinement of BMDS-relevant models ***FY 2012 Plans:*** -Plan and execute Space Tracking and Surveillance System (STSS) participation in BMDS flight tests. Collection from a variety of test targets and conditions enable a statistically relevant database to be constructed to support future space system design. -Current STSS participation in the Integrated Master Test Plan (IMTP) is planned to include the following BMDS flight tests with STSS striving to meet reasonable expectations to view these as well as seeking opportunities to participate in other IMTP events: -Aegis Intercept Flight Test (FTM-19 E2): Aegis 4.0.1 intercept of an Medium-Range Ballistic Missile (MRBM) target with a Standard Missile-3 (SM-3) Block IB missile -Collect data and analyze Space Tracking and Surveillance System (STSS) capability in the areas of Booster Acquisition, Plumes, Hard Body Detection, Complex Scenes, Post Boost Detection, Emerging Threat Detection, Emerging Threat Tracking, and Multiple Objects in a Scene -Fuse STSS Object Sighting Message and other sensors data in the Enterprise Sensors Laboratory and pass to the X-Lab to provide a simulated Aegis Engage-On fused track -Demonstrate STSS precision cue of radar in post-test playback of recorded data -Aegis Intercept Flight Test (FTM-20 E2): Aegis 4.0.1 intercept of a Short-Range Ballistic Missile (SRBM) target with a SM-3 Block IB -Collect data and analyze STSS capability in the areas of Booster Acquisition, Plumes, Hard Body Detection, Complex Scenes, Post Boost Detection, Emerging Threat Detection, Emerging Threat Tracking, and Multiple Objects in a Scene -Demonstrate Aegis Engage-On fused STSS and other sensors system track from the Enterprise Sensors Laboratory and X-Lab -Aegis Intercept Flight Test (FTM-16 E3): Aegis 4.0.1 intercept using a Standard Missile-3 (SM-3) Block IB interceptor against a Short-Range Ballistic Missile (SRBM) target -Collect data to analyze real-time sharing of track messages to the BMDS -Simulate Aegis (Hardware-in-the-Loop) Engage-On Space Tracking and Surveillance System (STSS) track			

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APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
-Conduct post-test assessment to support STSS providing precision cue to the Terminal High Altitude Area Defense through post-test playback of recorded data -Terminal High Altitude Area Defense (THAAD) Intercept Flight Test (FTT-13): THAAD exo-intercept of a complex separating Medium-Range Ballistic Missile (MRBM) target with Associated Objects -Demonstrate STSS precision cue to THAAD for live intercept -Collect data and analyze STSS capability in the areas of Booster Acquisition, Plumes, Hard Body Detection, Complex Scenes, Post Boost Detection, and Multiple Objects in a Scene -Demonstrate STSS precision cue to other sensors in post-test playback of recorded data -Ground-based Midcourse Defense Intercept Flight Test (FTG-06b) : Ground-based Midcourse Defense intercept of Intermediate-Range Ballistic Missile(IRBM) target based on results from FTG-06a (Ground-based Midcourse Defense intercept of IRBM with Associated Objects, Medium Closing Velocity using Exoatmospheric Kill Vehicle (EKV) Capability Enhancement-II) Failure Investigation Team -Collect data to analyze Space Tracking and Surveillance System (STSS) cold-body target tracking capability -STSS Object Sighting Messages will be fused in the Enterprise Sensors Laboratory and passed to the X-Lab to produce BMDS system tracks -Aegis/Terminal High Altitude Area Defense (THAAD)/Patriot Multiple Engagement Flight Test (FTO-1): BMDS Operational Flight Test against Short-Range Ballistic Missile (SRBM) and Medium-Range Ballistic Missile (MRBM) targets -Collect data and analyze Space Tracking and Surveillance System (STSS) capability in the areas of Booster Acquisition, Plumes, Hard Body Detection, Post Boost Detection, Emerging Threat Detection, Emerging Threat Tracking, and Multiple Objects in a Scene. -Fuse STSS Object Sighting Message and other sensors data in the Enterprise Sensors Laboratory and pass data to X-Lab using post-test playback of recorded data -Engineering and analysis efforts are increased to continue and complete analyses of data collected in FY 2011; conduct mission planning, execution, and analysis of multiple FY 2012 events; and provide pre-mission planning for upcoming FY 2013 test events -Conduct planning for integrated BMDS intercept test based on track data passed from the Space Tracking and Surveillance System (STSS) Demonstration Satellites through Command and Control, Battle Management and Communications (C2BMC) to Aegis or other weapon systems -Plan and participate in available Targets of Opportunity (TOOs) -Plan and coordinate range activities to support the MDA Integrated Master Test Plan (IMTP)			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Missile Defense Agency		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
-Continue Space Tracking and Surveillance System (STSS) Demo Analysis Center participation in BMDS testing and collection of scientific data for refinement of BMDS-relevant models			
Title: Near Field Infrared Experiment (NFIRE)	-	5.075	4.073
Articles:	0	0	0
Description: See Description Below			
FY 2010 Accomplishments: Funding for FY 2010 accomplishments is reported in prior year budget project WX12 ($10.608 million): -Continued On-Orbit Operations at the Missile Defense Space Experimentation Center (MDSEC) to support data collection and analysis on targets of opportunity -Conducted cooperative tests with other BMDS elements to include planning, execution and analyses; perform data collection on other targets of opportunity -Performed data collection events to include: 31 Maintenance and Calibrations, 17 Clutter Characterizations for the Precision Tracking Space System (PTSS) design, 12 Intelligence Collections, 8 Ground Static Firings, 11 BMDS Flight Tests in support of MDA and other users, and 6 Resident Space Objects -Continued laser communication experiments to assess viability of the technology -Performed 72 space-to-space links with the German Terra SAR-X satellite. Recorded over 9,000 seconds of bi-directional communication. -Performed 79 satellite-to-ground links; longest duration of bi-directional communication achieved at 177 seconds -Continued to support, as requested by Air Force Space Command (AFSPC) and other agencies, Space Situational Awareness -Assessed satellite health/utility for potential, future utilization -Deemed satellite health/utility sufficient to warrant continued out-year funding			
FY 2011 Plans: -Continue On-Orbit Operations at the Missile Defense Space Experimentation Center (MDSEC) to support data collection and analysis on targets of opportunity -Conduct cooperative tests with other BMDS elements to include planning, execution and analyses; perform data collection on other targets of opportunity -Continue laser communication experiments to assess viability of the technology			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Missile Defense Agency		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
-Continue to support, as requested by Air Force Space Command (AFSPC) and other agencies, Space Situational Awareness -Assess satellite health/utility for potential, future utilization ***FY 2012 Plans:*** -Continue On-Orbit Operations at the Missile Defense Space Experimentation Center (MDSEC) to support data collection and analysis on targets of opportunity -Conduct cooperative tests with other BMDS elements to include planning, execution and analyses; perform data collection on other targets of opportunity -Continue laser communication experiments to assess viability of the technology -Continue to support, as requested by Air Force Space Command (AFSPC) and other agencies, Space Situational Awareness -Assess satellite health/utility for potential, future utilization			
Title: Element Integration and Testing	-	5.911	3.076
Articles:	0	0	0
Description: See Description Below ***FY 2010 Accomplishments:*** Funding for FY 2010 accomplishments is reported in budget project WX12 ($16.155 million): -Completed initial checkout of satellite buses -Completed 104 of 127 functionality tests -Conducted acquisition/calibration of Demonstration Satellites with ground laser source -Completed acquisition sensor characterization on both satellites -Completed Space Vehicle 2`s track sensor line of sight calibration for its infrared bands -Began Space Vehicle 1`s track sensor line of sight calibration -Conducted acquisition to track sensor handover of Demonstration Satellites with ground laser source -Performed planning and execution of Missile Surrogate Testing (Aircraft and Resident Space Objects) -Demonstrated autonomous Resident Space Object tracking through earth limb and below-the-horizon -Demonstrated calibrated acquisition sensor Object Sighting Messages -Conducted participation of High Altitude Observatory (HALO) II to collect truth data that will verify satellites` sensor performance ***FY 2011 Plans:***			

Exhibit R-2A, RDT&E Project Justification: PB 2012 Missile Defense Agency		DATE: February 2011
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B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
-Completed remaining 23 functionality tests -Completed Space Vehicle 1`s track sensor line of sight calibration -Conduct planning and execution of Missile Surrogate Testing (Resident Space Objects) -Conduct periodic acquisition/calibration of Demonstration Satellites with ground laser source ***FY 2012 Plans:*** -Conduct planning and execution of Missile Surrogate Testing (Resident Space Objects) -Conduct periodic acquisition/calibration of Demonstration Satellites with ground laser source			
Title: Common Threat	-	-	-
Articles:	0	0	0
Description: See Description Below ***FY 2010 Accomplishments:*** Funding for FY 2010 accomplishments is reported in prior year budget project WX12 ($1.114 million) and ends in FY 2010: -Maintained and updated the agency-wide Ballistic Missile Defense System threat to provide data for future Ballistic Missile Defense System design, verification, and assessment -Updated adversary missile capabilities and characterizations consistent with projected threat environment to support Ballistic Missile Defense System Phased Adaptive Approach -Produced all the threat data required to enable Ballistic Missile Defense System Ground Tests, Ballistic Missile Defense System Performance/Technical Assessment 2009 and 2010, and Fiscal Year 2010 war games and exercises as documented in the Ballistic Missile Defense System Integrated Master Test Plan -Provided trajectory and optical signature data for Space Tracking and Surveillance System (STSS) capability analysis ***FY 2011 Plans:*** N/A ***FY 2012 Plans:*** N/A			
Accomplishments/Planned Programs Subtotals	-	108.842	92.078

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C. Other Program Funding Summary ($ in Millions)

Line Item	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
• 0603175C: *Ballistic Missile Defense Technology*	164.670	132.220	75.003		75.003	103.844	111.712	164.378	170.851	Continuing	Continuing
• 0603884C: *Ballistic Missile Defense Sensors*	544.352	454.859	222.374		222.374	357.271	336.514	318.321	348.944	Continuing	Continuing
• 0603888C: *Ballistic Missile Defense Test and Targets*	737.863	1,113.425	1,071.039		1,071.039	898.680	790.906	787.113	878.215	Continuing	Continuing
• 0603892C: *BMD AEGIS*	1,418.992	1,467.278	960.267		960.267	957.992	1,001.510	970.607	1,033.710	Continuing	Continuing
• 0603895C: *BMD SYSTEM SPACE PROGRAM*	11.913	10.942	7.951		7.951	6.781	6.465	6.496	6.915	Continuing	Continuing
• 0603896C: *BMD C2BMC*	327.074	342.625	364.103		364.103	330.337	353.081	338.835	304.217	Continuing	Continuing
• 0603904C: *MISSILE DEFENSE INTEGRATION & OPERATIONS CENTER (MDIOC)*	82.926	86.198	69.325		69.325	64.514	55.808	56.769	54.621	Continuing	Continuing
• 0604883C: *PRECISION TRACKING SPACE SYSTEM*	0.000	66.969	160.818		160.818	272.881	302.344	273.623	331.205	Continuing	Continuing

D. Acquisition Strategy

The Space Tracking and Surveillance System (STSS) program follows the Missile Defense Agency`s capability-based acquisition strategy that emphasizes testing, incremental development, and evolutionary acquisition. The STSS Demonstration Satellites effort utilizes a single prime contractor, Northrop Grumman Aerospace Systems (NGAS), formerly known as Northrop Grumman Space Technology (NGST), with the subcontractor Raytheon providing the sensor payload. The contract for the Space Tracking and Surveillance System Demonstration Satellites effort was awarded in third quarter FY 2002. This contract implements MDA`s capability-based acquisition strategy by using existing satellite hardware as a low risk opportunity, building upon the lessons learned from previous development efforts, and establishing a series of planned enhancements to bring added capability to the BMDS.

The acquisition strategy shifts from the launch phase to the operations and support of the Space Tracking and Surveillance System (STSS) Demonstration satellites. Options for Operations and Support are authorized under an Undefinitized Contract Action (UCA) within the original contract scheduled to be definitized by the end of the second quarter of FY 2011.

E. Performance Metrics

NA

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Missile Defense Agency		DATE: February 2011
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Product Development ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites Capability Based R&D MD12	SS/CPAF	NGAS:Redondo Beach, CA	390.302	62.625	Oct 2010	50.803	Oct 2011	-		50.803	Continuing	Continuing	Continuing
Demonstration Satellites Systems Engineering MD12	FFRDC	Aerospace:Los Angeles AFB CA, Schriever AFB CO	40.697	3.167	Oct 2010	3.374	Oct 2011	-		3.374	Continuing	Continuing	Continuing
Demonstration Satellites STSS Support to Missile Defense Space Experimentation Center (MDSEC) MD12	MIPR	MDSEC:CO	-	2.835	Dec 2010	3.012	Dec 2011	-		3.012	0.000	5.847	5.847
Near Field Infrared Experiment (NFIRE) Prime Contract MD12	SS/CPAF	Orbital Sciences Corporation:AZ	4.614	3.968	Nov 2010	2.977	Nov 2011	-		2.977	Continuing	Continuing	Continuing
Near Field Infrared Experiment (NFIRE) Mission Planning/Data Reduction MD12	MIPR	MIT/LL:MA	1.996	1.107	Nov 2010	1.096	Nov 2011	-		1.096	0.000	4.199	4.119
		Subtotal	437.609	73.702		61.262		-		61.262			

Remarks

Funding for Capability Based R&D efforts is placed on contract for Northrop Grumman Aerospace Systems (NGAS) to assist in conducting mission planning and operations of the Demonstration Satellites. Target Value of Contract above for this contract reflects continuing pending negotiation of options for operations, testing, and support for the Space Tracking and Surveillance System (STSS) Demonstration Satellites.

BMD Systems Engineering provides System Description Documents and System Specifications for elements to design, build, integrate and test BMDS components. These products optimize performance at the system level and further ensure that the assessment of the designed BMD System is based on sufficient ground and flight testing. Compliance of the Space Tracking and Surveillance System (STSS) to BMD System level requirements is monitored in a series of requirements and design reviews both at the system and element levels. Systems Engineering support is provided by Aerospace directly to the Demonstration Satellites effort.

Space Tracking and Surveillance System (STSS) Support to Missile Defense Space Experimentation Center (MDSEC) funds support cost associated with the satellite operations conducted at the MDSEC.

Near Field Infrared Experiment (NFIRE) funding will be forwarded to several contractors and government organization to include, but not limited to Orbital Sciences Corporation (formerly General Dynamics) and the Air Force Research Laboratory. Funding covers support for operations, testing, and analysis activities. The Target Value of Contract above for the NFIRE Prime Contract reflects continuing pending negotiation to extend operations, testing, and support for the NFIRE satellite.

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Missile Defense Agency		DATE: February 2011
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Support ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
Demonstration Satellites Program Mission Support MD12	Various	SMC:CA	14.231	8.456	Oct 2010	6.136	Oct 2011	-		6.136	Continuing	Continuing	Continuing
Demonstration Satellites Other Government Agency (OGA) Civilian MD12	RO	SMC:CA	7.817	2.724	Oct 2010	2.784	Oct 2011	-		2.784	Continuing	Continuing	Continuing
Demonstration Satellites MDA Civilian MD12	Allot	MDA:AL	3.322	1.893	Oct 2010	1.606	Oct 2011	-		1.606	Continuing	Continuing	Continuing
Demonstration Satellites Contract Support Services (CSS) MD12	C/BPA	MDA:AL	7.931	2.937	Nov 2010	1.898	Nov 2011	-		1.898	Continuing	Continuing	Continuing
		Subtotal	33.301	16.010		12.424		-		12.424			

Remarks

Demonstration Satellites Support Costs include the following:

-MDA Civilian Salaries to support program office management
-Other Government Agency (OGA) Civilian personnel - Reimbursement of Air Force Personnel costs that directly support the Space Tracking and Surveillance System (STSS) program, for the Demonstration Satellites
-Contract Support Services (CSS) Costs - Provides administrative, engineering, logistics and financial management/cost estimating support services.
-For FY 2011 - Air Force tenant related costs: Base network support and Los Angeles Air Force Base shared costs for: Telephone Operations and maintenance, Multimedia Equipment Maintenance and Art services, local online Unit Manning Document application, base-wide maintenance, Microsoft Enterprise Licensing
-In FY2012, STSS will have completed transition to the Missile Defense Space Experimentation Center (MDSEC) and will fund for IT Network Support, telephone operations and maintenance, hardware and software purchases and maintenance through the Missile Defense Integration and Operations Center (MDIOC) service contracts
-Other program costs - the Program office is responsible for funding personnel travel, training, and supplies

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Level Testing STSS Demo Analysis Center (SDAC) - Government Verification & Validation (V&V) MD12	MIPR	Various:Various	1.139	1.002	Jan 2011	2.080	Jan 2012	-		2.080	0.000	4.221	4.221

Exhibit R-3, RDT&E Project Cost Analysis: PB 2012 Missile Defense Agency		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
BMDS Level Testing BMDS Integration-Test Engineering and Resources MD12	SS/CPAF	NGAS:Redondo Beach, CA	-	3.687	Nov 2010	7.914	Dec 2011	-		7.914	Continuing	Continuing	Continuing
BMDS Level Testing Systems Engineering MD12	FFRDC	Aerospace:Los Angeles AFB CA	7.612	8.530	Oct 2010	5.322	Oct 2011	-		5.322	Continuing	Continuing	Continuing
Element Integration and Testing Ground Support for Acquisition Line-of-Sight Calibration MD12	MIPR	AFRL:Kirtland AFB NM	0.976	0.915	Jan 2011	0.680	Jan 2012	-		0.680	0.000	2.571	2.571
Element Integration and Testing STSS Capability Based R&D-Test Support MD12	SS/CPAF	NGAS:Redondo Beach, CA	13.250	4.996	Oct 2010	2.396	Oct 2011	-		2.396	Continuing	Continuing	Continuing
		Subtotal	22.977	19.130		18.392		-		18.392			

Remarks

Efforts associated with testing are identified here as BMDS Level Testing or Element Integration and Testing. Cost began to be captured in the Test and Evaluation area starting with FY 2010 after the September 2009 launch of the Space Tracking and Surveillance System (STSS) Demonstration Satellites.

BMDS Level Testing: For STSS, FY 2011 represents the first full year of BMDS Level Testing participation and second year of operations. As STSS moves into FY 2012, engineering costs associated with BMDS Level Test increases to complete necessary analyses of data collected in FY 2011; conduct mission planning, test execution, and data analysis of FY 2012 test events; and prepare and conduct pre-mission planning as necessary for upcoming FY 2013 test events.

-Funding for the Space Tracking and Surveillance System (STSS) Demo Analysis Center maximizes return on investment to further the development of the future BMDS space layer. Costs covered include the purchase and maintenance of software tools for mission planning and simulation, data management and Overhead Persistent Infrared (OPIR) data analysis as well as test engineering and analysis support for BMDS testing and collection of scientific data for refinement of BMDS-relevant models.
-BMDS Integration-Test Engineering and Resources funding covers: test engineering to conduct pre-mission planning, execution, and post-mission analyses for testing events associated with Space Tracking and Surveillance System (STSS) participation in BMDS flight tests. Target Value of Contract above for this contract reflects continuing pending negotiation of options for operations, testing, and support for the Space Tracking and Surveillance System (STSS) Demonstration Satellites.
-Funding for Systems Engineering is allocated to Aerospace to provide independent test engineering to: assist in requirements definition, mission planning and tasking capability for BMDS missile flight tests and targets of opportunity; analyze mission results and prepare detailed reports; analyze data for use in anchoring and validating the modeling and simulation tool System Performance Evaluation Tool (SPET) and other MDA models; aid in issue resolution; support interface with design engineers to understand and develop operating and test procedures; and support interface with other government agencies.

Element Integration and Testing:

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Test and Evaluation ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
-Funding for Ground Support for Acquisition Line-of-Sight (LOS) Calibration goes to the Air Force Research Laboratory (AFRL) to provide laser ground source to perform line-of-sight calibration of acquisition sensors on board the two Space Tracking and Surveillance System (STSS) Demonstration Satellites. -The Space Tracking and Surveillance System (STSS) Capability Based R&D-Test Support funding covers costs associated with the STSS Prime Contractor providing satellite functionality testing and calibration support. Target Value of Contract above for this contract reflects continuing pending negotiation of options for operations, testing, and support for the Space Tracking and Surveillance System (STSS) Demonstration Satellites.												

Management Services ($ in Millions)

Cost Category Item	Contract Method & Type	Performing Activity & Location	Total Prior Years Cost	FY 2011 Cost	FY 2011 Award Date	FY 2012 Base Cost	FY 2012 Base Award Date	FY 2012 OCO Cost	FY 2012 OCO Award Date	FY 2012 Total Cost	Cost To Complete	Total Cost	Target Value of Contract
		Subtotal	-	-		-		-		-	0.000	0.000	0.000

	Total Prior Years Cost	FY 2011		FY 2012 Base		FY 2012 OCO		FY 2012 Total	Cost To Complete	Total Cost	Target Value of Contract
Project Cost Totals	493.887	108.842		92.078		-		92.078			

Remarks

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Missile Defense Agency		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	**PROJECT** MD12: *Space Tracking and Surveillance System (STSS)*

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Missile Defense Agency		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	**PROJECT** MD12: *Space Tracking and Surveillance System (STSS)*

Exhibit R-4, RDT&E Schedule Profile: PB 2012 Missile Defense Agency		DATE: February 2011
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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Missile Defense Agency		DATE: February 2011
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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Missile Defense Agency		DATE: February 2011
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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Missile Defense Agency		DATE: February 2011
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Exhibit R-4, RDT&E Schedule Profile: PB 2012 Missile Defense Agency		DATE: February 2011
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Exhibit R-4A, RDT&E Schedule Details: PB 2012 Missile Defense Agency		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	**PROJECT** MD12: *Space Tracking and Surveillance System (STSS)*

Schedule Details

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Space Tracking and Surveillance System (STSS) - Operational and Test Readiness	1	2010	2	2010
Space Tracking and Surveillance System (STSS) - Missile Surrogate (Aircraft) Tests-3Q2010	3	2010	3	2010
Space Tracking and Surveillance System (STSS) - Missile Surrogate (Aircraft) Tests-4Q2010	4	2010	4	2010
Ground-based Midcourse Defense 2-stage Booster Characterization Flight Test (BVT-01)	3	2010	3	2010
United States Air Force Glory Trip 200 Flight Test (GT-200)	3	2010	3	2010
Terminal High Altitude Area Defense (THAAD) Intercept Flight Test (FTT-14): THAAD low-endo intercept of a unitary Short-Range Ballistic Missile (SRBM) target	3	2010	3	2010
United States Air Force Glory Trip (GT-202)	4	2010	4	2010
Airborne Laser Test Bed (ALTB) Flight Experiment (FEL-01b): ALTB intercept of a SRBM	4	2010	4	2010
Aegis Simulated Intercept Flight Test (JFTM-04 E1): Aegis 4.0.1 simulated intercept of a surrogate separating Medium-Range Ballistic Missile (MRBM)	1	2011	1	2011
Arrow Intercept Flight Test (USFT-4): Multi-national BMD test with Arrow intercept of Short-Range Ballistic Missile (SRBM) with European Command participation	2	2011	2	2011
Aegis Simulated Intercept Flight Test (FTM-16 E1): Aegis 4.0.1 simulated Standard Missile-3 (SM-3) Block IB intercept of a SRBM target with Associated Objects	2	2011	2	2011
United States Air Force Glory Trip 203 Flight Test (GT-203)	2	2011	2	2011
Aegis Intercept Flight Test (FTM-15): Aegis 3.6.1 Standard Missile-3 (SM-3) Block 1A	3	2011	3	2011
Short-Range Air Launched Target Flight Test (FTX-17): Return to flight of the Short-Range Air Launch Target	3	2011	3	2011
Aegis Intercept Flight Test (FTM-16 E2): Aegis 4.0.1 first intercept using Standard Missile-3 (SM-3) Block IB interceptor against a SRBM target	4	2011	4	2011

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Missile Defense Agency		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	**R-1 ITEM NOMENCLATURE** PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	**PROJECT** MD12: *Space Tracking and Surveillance System (STSS)*

	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
Terminal High Altitude Area Defense (THAAD) Intercept Flight Test (FTT-12): THAAD exo-intercept of a complex separating Medium-Range Ballistic Missile (MRBM) target with Associated Objects	4	2011	4	2011
Aegis Intercept Flight Test (FTM-19 E2): Aegis 4.0.1 intercept of an Medium-Range Ballistic Missile (MRBM) target with a Standard Missile-3 (SM-3) Block IB missile	2	2012	2	2012
Aegis Intercept Flight Test (FTM-20 E2): Aegis 4.0.1 intercept of a Short-Range Ballistic Missile (SRBM) target with a SM-3 Block IB	2	2012	2	2012
Aegis Intercept Flight Test (FTM-16 E3): Aegis 4.0.1 intercept using Standard Missile-3 (SM-3) Block 1B interceptor against a SRBM target	3	2012	3	2012
Terminal High Altitude Area Defense (THAAD) Intercept Flight Test (FTT-13): THAAD exo-intercept of a complex separating Medium-Range Ballistic Missile (MRBM) target with Associated Objects	3	2012	3	2012
Ground-based Midcourse Defense Intercept Flight Test (FTG-06b): Ground-based Midcourse Defense intercept of Intermediate-Range Ballistic Missile (IRBM) target based on results from FTG-06a	3	2012	3	2012
Aegis/Terminal High Altitude Area Defense (THAAD)/Patriot Multiple Engagement Flight Test (FTO-1): BMDS Operational Flight Test against Short-Range and Medium-Range Ballistic Missile targets	4	2012	4	2012
Aegis Simulated Intercept Flight Test (FTM-21 E1): Using digital engagement coordination two Aegis 4.0.1 conduct simulated Standard Missile-3 (SM-3) Block IB intercept of SRBM targets in Raid scenario	2	2013	2	2013
Aegis Simulated Intercept Flight Test (FTM-21 E2): Using digital engagement coordination two Aegis 4.0.1 simulate intercept of Medium-Range Ballistic Missile (MRBM) targets in raid scenario	2	2013	2	2013
Aegis Intercept Flight Test (FTM-22 E2): Aegis 4.0.1 Standard Missile-3 (SM-3) Block IB intercept of a Short-Range Ballistic Missile (SRBM) target	2	2013	2	2013
Aegis Intercept Flight Test (FTM-21 E3): Aegis 4.0.1 intercept of Short-Range Ballistic Missile (SRBM) target using Standard Missile-3 (SM-3) Block IB salvo	3	2013	3	2013

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Missile Defense Agency		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

	Start		End	
Events	Quarter	Year	Quarter	Year
Aegis Intercept Flight Test (FTM-23): Aegis 4.0.1 SM-3 Block IB with integrated fire control intercept an Intermediate-Range Ballistic Missile (IRBM) target	3	2013	3	2013
Aegis Intercept Flight Test (FTM-19 E1): Aegis 4.0.1 intercept of MRBM target with Standard Missile-3 (SM-3) Block IB missile	3	2013	3	2013
Terminal High Altitude Area Defense (THAAD) Intercept Flight Test (FTT-11a): THAAD exo-intercept of a complex separating Medium-Range Ballistic Missile (MRBM) target with Associated Objects	3	2013	3	2013
Aegis Intercept Flight Test (FTM-20 E1): Aegis 5.0 intercept of Medium-Range Ballistic Missile (MRBM) target with Standard Missile-3 (SM-3) Block IB missile	4	2013	4	2013
Ground-based Midcourse Defense Intercept Flight Test (FTG-13): Ground-based Midcourse Defense intercept of Intermediate-Range Ballistic Missile (IRBM) target with Associated Objects	4	2013	4	2013
Terminal High Altitude Area Defense (THAAD) Intercept Flight Test (FTT-15): THAAD endo-intercept of a complex separating Medium-Range Ballistic (MRBM) target with Associated Objects	3	2014	3	2014
Ground-based Midcourse Defense Intercept Flight Test (FTG-08): Intercept of Intermediate-Range Ballistic Missile target with Associated Objects using 2-stage booster with first generation avionics	4	2014	4	2014
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-2Q2010	2	2010	2	2010
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-3Q2010	3	2010	3	2010
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-4Q2010	4	2010	4	2010
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-1Q2011	1	2011	1	2011
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-2Q2011	2	2011	2	2011
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-3Q2011	3	2011	3	2011

Exhibit R-4A, RDT&E Schedule Details: PB 2012 Missile Defense Agency		DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD12: *Space Tracking and Surveillance System (STSS)*

	Start		End	
Events	Quarter	Year	Quarter	Year
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-4Q2011	4	2011	4	2011
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-1Q2012	1	2012	1	2012
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-2Q2012	2	2012	2	2012
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-3Q2012	3	2012	3	2012
Space Tracking and Surveillance System (STSS) Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-4Q2012	4	2012	4	2012
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-1Q2013	1	2013	1	2013
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-2Q2013	2	2013	2	2013
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-3Q2013	3	2013	3	2013
STSS Demonstration Satellites-BMDS Flight Tests/Targets of Opportunity-4Q2013	4	2013	4	2013
Space Tracking and Surveillance System (STSS) Demonstration Satellites On-Orbit Operations-1Q2010-4Q2010	1	2010	4	2010
STSS Demonstration Satellites On-Orbit Operations-1Q2011	1	2011	1	2011
Space Tracking and Surveillance System (STSS) Demonstration Satellites On-Orbit Operations-2Q2011-4Q2011	2	2011	4	2011
STSS Demonstration Satellites On-Orbit Operations-1Q2012-4Q2012	1	2012	4	2012
STSS Demonstration Satellites On-Orbit Operations-1Q2013-4Q2013	1	2013	4	2013
Space Tracking and Surveillance System (STSS) Demonstration Satellites On-Orbit Operations-1Q2014-4Q2014	1	2014	4	2014
Space Tracking and Surveillance System (STSS) Demonstration Satellites On-Orbit Operations-1Q2015-4Q2015	1	2015	4	2015
Space Tracking and Surveillance System (STSS) Demonstration Satellites On-Orbit Operations-1Q2016-4Q2016	1	2016	4	2016
Near Field Infrared Experiment (NFIRE) - Targets of Opportunity-1Q2010	1	2010	1	2010
NFIRE - Targets of Opportunity-2Q2010	2	2010	2	2010
NFIRE - Targets of Opportunity-3Q2010	3	2010	3	2010

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	Start		End	
Events	Quarter	Year	Quarter	Year
NFIRE - Targets of Opportunity-4Q2010	4	2010	4	2010
Near Field Infrared Experiment (NFIRE) - Targets of Opportunity-1Q2011	1	2011	1	2011
NFIRE - Targets of Opportunity-2Q2011	2	2011	2	2011
NFIRE - Targets of Opportunity-3Q2011	3	2011	3	2011
Near Field Infrared Experiment (NFIRE) - Targets of Opportunity-4Q2011	4	2011	4	2011
NFIRE - Targets of Opportunity-1Q2012	1	2012	1	2012
Near Field Infrared Experiment (NFIRE) - Targets of Opportunity-2Q2012	2	2012	2	2012
NFIRE - Targets of Opportunity-3Q2012	3	2012	3	2012
NFIRE - Targets of Opportunity-4Q2012	4	2012	4	2012
NFIRE On-Orbit Operations-1Q2010-4Q2010	1	2010	4	2010
Near Field Infrared Experiment (NFIRE) On-Orbit Operations-1Q2011	1	2011	1	2011
NFIRE On-Orbit Operations-2Q2011-4Q2011	2	2011	4	2011
NFIRE On-Orbit Operations-1Q2012-4Q2012	1	2012	4	2012
Near Field Infrared Experiment (NFIRE) Laser Communications Terminal (LCT) Experiments/Operations-2Q2010	2	2010	2	2010
NFIRELCT Experiments/Operations-3Q2010	3	2010	3	2010
NFIRE LCT Experiments/Operations-4Q2010	4	2010	4	2010
Near Field Infrared Experiment (NFIRE) Laser Communications Terminal (LCT) Experiments/Operations-1Q2011	1	2011	1	2011
NFIRE LCT Experiments/Operations-2Q2011	2	2011	2	2011
NFIRE LCT Experiments/Operations-3Q2011	3	2011	3	2011
NFIRE LCT Experiments/Operations-4Q2011	4	2011	4	2011
NFIRE LCT Experiments/Operations-1Q2012	1	2012	1	2012
NFIRE LCT Experiments/Operations-2Q2012	2	2012	2	2012
NFIRE LCT Experiments/Operations-3Q2012	3	2012	3	2012

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	Start		End	
Events	**Quarter**	**Year**	**Quarter**	**Year**
NFIRE LCT Experiments/Operations-4Q2012	4	2012	4	2012

Exhibit R-2A, RDT&E Project Justification: PB 2012 Missile Defense Agency			DATE: February 2011
APPROPRIATION/BUDGET ACTIVITY 0400: *Research, Development, Test & Evaluation, Defense-Wide* BA 4: *Advanced Component Development & Prototypes (ACD&P)*	R-1 ITEM NOMENCLATURE PE 0603893C: *SPACE TRACKING & SURVEILLANCE SYSTEM*	PROJECT MD40: *Program-Wide Support*	

COST ($ in Millions)	FY 2010	FY 2011	FY 2012 Base	FY 2012 OCO	FY 2012 Total	FY 2013	FY 2014	FY 2015	FY 2016	Cost To Complete	Total Cost
MD40: *Program-Wide Support*	-	3.836	4.275	-	4.275	2.528	2.425	1.659	1.757	Continuing	Continuing
Quantity of RDT&E Articles	0	0	0		0	0	0	0	0		

Note

In accordance with the Missile Defense Agency revised budget structure, the content previously planned in Project ZX40 is now captured in Project MD40 beginning in FY11.

A. Mission Description and Budget Item Justification

Program-Wide Support (PWS) contains non-headquarters management costs in support of MDA functions and activities across the entire Ballistic Missile Defense System (BMDS). Includes Government Civilians, Advisory and Assistance Services, and Federally Funded Research and Development Contracts (FFRDC) providing integrity and oversight of the BMDS as well as supporting MDA in enabling the development and evaluation of technologies that will respond to the changing threat. Other costs included provide facility capabilities for MDA Executing Agent locations (with the exception of Federal Office Building 2 after FY 2011), such as physical and technical security, legal services, travel and agency training, office and equipment leases, rents and utilities, data and unified communications support, supplies and maintenance, and similar operating expenses. Also includes legal settlements, and foreign currency fluctuations on a limited number of foreign contracts.
In keeping with congressional intent, PWS is allocated among the PEs on a pro-rata basis and therefore fluctuates by year based on the total MDA budget and the individual PE`s budget amount.

The budget project did not exist in program wide support in FY2010

B. Accomplishments/Planned Programs ($ in Millions, Article Quantities in Each)	FY 2010	FY 2011	FY 2012
Title: Civilian Salaries and Support	-	3.836	4.275
Articles:	0	0	0
Description: See Description Below			
FY 2010 Accomplishments: The budget project did not exist in Program Wide Support in FY2010			
FY 2011 Plans: See paragraph A, Mission Description and Budget Item Justification			
FY 2012 Plans: See paragraph A, Mission Description and Budget Item Justification			
Accomplishments/Planned Programs Subtotals	-	3.836	4.275

Exhibit R-2A, RDT&E Project Justification: PB 2012 Missile Defense Agency		DATE: February 2011
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C. Other Program Funding Summary ($ in Millions)

N/A

D. Acquisition Strategy

N/A

E. Performance Metrics

NA